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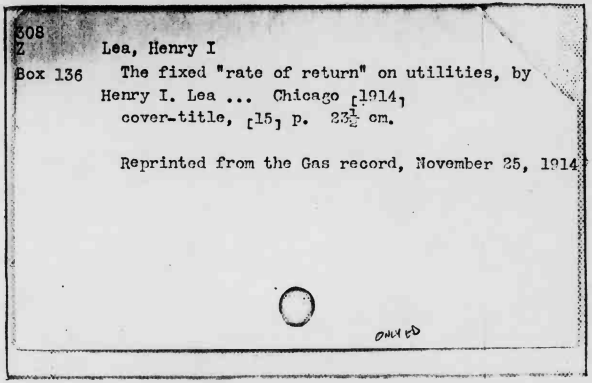
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THE FIXED "RATE OF RETURN" ON UTILITIES

BY
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CONSULTING GAS ENGINEER
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CHICAGO

INTRODUCTION

One of the most vital points in the regulation of utilities by state commissions is found in the rate of return allowed.

The fixed rate of return does not meet requirements.

It is believed that the variable rate of return, as herein suggested, will be found not only equitable but capable of yielding to the communities served and to the utilities themselves, the maximum of benefit.

The advantages to community and to utility are mutual.

HENRY I. LEA.

(Article Reprinted from the 11/25/14 Issue of "THE GAS RECORD"—CHICAGO)

THE FIXED "RATE OF RETURN" ON UTILITIES

This Serious Error of Present Commission Regulation is shown to be Against the Best Interests of All Concerned and a Practicable Solution of the Difficulty is Suggested

By Henry I. Lea

A uniform wage among men has been shown to result in the over-payment of many men, the under-payment of a smaller number, and the stifling of ambition and effort in many of those most capable of development.

I presume it is safe to say that none of the leaders in any line of effort has been developed except through the hope of attaining a position considered in some way more attractive than that of the average man.

There must have been in each of such cases a constant incentive to greater and more efficient effort.

Even those men who have become leaders may be seen to relax when, through conditions beyond their control, the abilities of such men along proper channels are no longer fairly rewarded.

All of this is so well known that it would hardly be worth repeating here were it not for the fact that it has apparently been overlooked in the regulations of some of our public utility commissions.

The results from the operation of any public utility are, of course, very largely determined by the attitude of the individuals operating that utility; and, if those

individuals do not have before them a continuous incentive to greater and more efficient effort, it is obvious that the community must suffer.

In all lines of bargaining between man and man, it is accepted as proper and right that the seller shall be entitled to a larger profit if by any proper device he can give to the buyer a larger value for the unit price.

Recognition of this principle is certainly one of the most potent causes of our present industrial development.

Such dealings as are fair and right between man and man should be fair and right between the public utility and the community served; yet the public utility commissions of several of our states have seen fit to place arbitrary limits upon the earning capacities of the utilities in such manner as to injure not only the utilities but also (and in greater degree) the communities served.

There is no valid objection to the control by commissions of the rates (and through the rates, the earning capacities) of public utilities, provided such regulation be brought about in such manner as to be of greatest benefit to all concerned.

It is impossible to realize the greatest benefit to all concerned if the utility is restricted in its earning capacity to a fixed percentage of its rate-making value, because when a given utility has reached the maximum earnings allowable under such regulation, the men responsible for its operation will naturally relax their efforts toward greater economies of operation and greater volume of sales and further reductions in selling price of the product.

The interests of the community served can be best protected by holding before the management of the utility a continuous incentive to further effort.

Such incentive is not provided by the type of rulings made to date by public utility commissions in the matter of rate of return.

The rate of return should not be fixed at a given percentage of the rate-making value, but should be variable and largely determined by the efficiency of the management as viewed from the standpoint of the community served.

In other words, if a given utility can, by any proper device, bring about a reduction in the average selling price of its product, such utility should be allowed a relatively larger rate of return than considered proper under the higher selling price of its product.

Let us assume that two given cities have the same population and the same characteristics (in so far as the cost of gas-plant construction and of gas manufacture and distribution are concerned) and that these two cities are supplied by separate companies, each selling gas at a dollar per thousand and each having the same volume of sales.

If, through the coming years, the first of these gas companies continues selling gas at a dollar per thousand cubic feet, while the second plant, through more

efficient management, succeeds in increasing its sales or in reducing its operating expenses (or both) to such extent as to allow of a reduction in the average selling price per thousand cubic feet, it is obvious that the rate of return allowed to the second company (other things being equal) should be greater than that allowed the first company, because the second company, through its reduction in the average price of gas, will have effected for the community a distinct and measurable saving.

As between man and man, there should be no question as to the propriety of allowing a higher rate of return in the second instance than in the first.

No community will receive its maximum benefit from the use of gas until the sales in that community are at a maximum.

Such maximum sales will not be obtained until the schedule of rates adopted places gas in a strong competitive position throughout its entire range of possible use.

As the maximum earnings of the gas company cannot be reached except through maximum sales of its product, it is clear that the interests of the community and the interests of the gas company are very largely identical; it is also clear that such maximum benefits to the community as well as to the company will never be obtained except through the active co-operation of all concerned.

It is unfair to demand and illogical to expect relatively increased benefits for the community through use of the product of the utility, without relatively increased reward to the utility.

As previously indicated, the rate of increase in reward to the utility should be determined by its rate of increase in efficiency as viewed from the standpoint of the community.

In the tabulation accompanying these notes, I have shown a specific method of measuring such efficiency.

In preparing this tabulation it is assumed that a rate-making body shall have examined, in the year 1915, a gas property having, at the beginning of that year, a rate-making value of $10,000,000.

It is also assumed that during that year this company shall have sold 2,000,000 M cubic feet of gas, and that the average net revenue received from such sales shall have been $1.00 per thousand cubic feet sold, yielding a net total revenue for the year of $2,000,000.

It is also assumed that for that year this company shall have had operating expense (exclusive of bond interest and dividends) of 65c per thousand cubic feet sold, or a total operating expense for the year of $1,300,000. This would leave, for bond interest and dividends, 35c per thousand cubic feet sold, or a total of $700,000.

It is also assumed that to the rate-making value at the beginning of 1915 there shall have been added $909,000 during the year. The amount of $700,000 available for bond interest and dividends during 1915 would therefore represent 6.69% on the average rate-

TABLE SHOWING RELATIVE IMPORTANCE TO COMMUNITY AND TO COMPANY OF OPERATION UNDER VARIABLE RATE OF RETURN

	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925
Rate-making value at beginning of year	$10,000,000	$10,909,000	$11,869,000	$12,881,000	$13,946,000	$15,064,000	$16,235,000	$17,459,000	$18,735,000	$20,060,000	$21,432,000
Additions to same during year	909,000	960,000	1,012,000	1,065,000	1,118,000	1,171,000	1,224,000	1,276,000	1,325,000	1,372,000	1,415,000
Gas sold during year (thousand cubic feet)	2,000,000	2,200,000	2,420,000	2,662,000	2,928,200	3,221,020	3,543,122	3,897,434	4,287,177	4,715,894	5,187,483
Increase over sales of previous year	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Average net revenue per thousand cubic feet sold	$1.00	$ .985	$ .970	$ .955	$ .94	$ .925	$ .91	$ .895	$ .88	$ .865	$ .85
Total net revenue per year	$2,000,000	$2,167,000	$ 2,347.400	$2,542,210	$2,752,508	$2,979,444	$3,224,241	$3,488,203	$3,772,716	$4,079,248	$4,409,360
Operating expense (exclusive of bond interest and dividends) per thousand cubic feet sold	$ .65	$ .632	$ .614	$ .596	$ .578	$ .560	$ .542	$ .524	$ .506	$ .488	$ .47
Total operating expense (exclusive of bond interest and dividends)	$1,300,000	$1,390,400	$1,485,880	$1,586,552	$1,692,500	$1,803,771	$1,920,372	$2,042,255	$2,169,312	$2,301,356	$2,438,117
Available for bond interest and dividends per thousand cubic feet sold	$ .35	$ .353	$ .356	$ .359	$ .362	$ .365	$ .368	$ .371	$ .374	$ .377	$ .38
Total available for bond interest and dividends (=net earnings)	$700,000	$776,600	$861,520	$955,658	$1,060,008	$1,175,672	$1,303,869	$1,445,948	$1,603,404	$1,777,892	$1,971,243
Rate of return on average rate-making value throughout year	6.69%	6.81%	6.96%	7.12%	7.30%	7.51%	7.73%	7.98%	8.26%	8.56%	8.90%
Net earnings required to yield 6.69% on average rate-making value throughout year	$700,000	$761,924	$827,888	$897,363	$971,054	$1,046,952	$1,127,064	$1,210,689	$1,297,693	$1,387,907	$1,481,133
Actual net earnings in excess of 6.69% return	0	$14,676	$33,632	$58,295	$88,954	$128,720	$176,805	$235,259	$305,711	$389,985	$490,110
Minimum actual saving to community through reduction in average price of gas:											
On volume sold during 1915	0	$30,000	$60,000	$90,000	$120,000	$150,000	$180,000	$210,000	$240,000	$270,000	$300,000
On increase during 1916	.....	0	3,000	6,000	9,000	12,000	15,000	18,000	21,000	24,000	27,000
" " " 1917	.....	.....	0	3,300	6,600	9,900	13,200	16,500	19,800	23,100	26,400
" " " 1918	.....	.....	.....	0	3,630	7,260	10,890	14,520	18,150	21,780	25,410
" " " 1919	.....	.....	.....	.....	0	3,993	7,986	11,979	15,972	19,965	23,958
" " " 1920	.....	.....	.....	.....	.....	0	4,392	8,784	13,176	17,568	21,961
" " " 1921	.....	.....	.....	.....	.....	.....	0	4,832	9,663	14,494	19,326
" " " 1922	.....	.....	.....	.....	.....	.....	.....	0	5,315	10,629	15,944
" " " 1923	.....	.....	.....	.....	.....	.....	.....	.....	0	5,846	11,692
" " " 1924	.....	.....	.....	.....	.....	.....	.....	.....	.....	0	6,431
Total	.....	$30,000	$63,000	$99,300	$139,230	$183,153	$231,468	$284,615	$343,076	$407,382	$478,122
Minimum actual saving to community in percentage of total payment by community for gas	0	1.38%	2.68%	3.90%	5.05%	6.14%	7.17%	8.15%	9.09%	9.98%	10.84%

making value of this property throughout the year.

It is also assumed that the public utility commission (or other rate-making body) shall have determined that 6.69% is a fair rate of return for this property under the conditions found in 1915.

Now, my suggestion is that, instead of maintaining this same 6.69% on the then rate-making value as constituting a fair rate of return through each of the years to follow, the rate of return allowable to the company shall be increased from year to year by an amount in money not exceeding the saving effected for the community during such year by the company.

As will be seen from this table, I have assumed that the sales of gas by this company can be increased from 2,000,000 M cubic feet in 1915 to more than 5,000,000 M in 1925.

Accompanying this increase in sales will, of course, be a very material increase in the property of the company and consequently in its rate-making value, although such increase in rate-making value usually will be proportionately less than the increase in sales.

It is further assumed that throughout this period the company finds itself able to make such modifications of its gas rate schedule as will result in a reduction of 1½c per M each year in the average selling price of gas, and that the company also will be able, in this period and with the sales indicated, to reduce its operating expenses from 65c in 1915 to 47c in 1925.

It is understood, of course, that the uniform rates of increase and decrease here shown are not realized in practice, and that they are used here merely to illustrate the method of this calculation. As a matter of fact, such attractive decrease in operating expense as here indicated could be brought about only in a property showing constant gains in number of consumers per mile of main, gas sold per meter, etc., etc.

Referring now to the year 1916, it will be seen that the gas sales for that year are shown to be 10% in excess of the sales for 1915, that the average net revenue per thousand cubic feet sold for that year is 98½c, and that the operating expense has been reduced to an average of 63.2c.

Such operating conditions would result in leaving 35.3c per thousand cubic feet sold, or $776,600 available for bond interest and dividends; but this amount of money represents 6.81% on the average rate-making value for the year and is $14,676 more than would be allowed if the 6.69% rate of return had been maintained.

It therefore becomes necessary to show that the company has actually saved to the community a sum in excess of this $14,676, which I claim should now be allowed in addition to 6.69% return on the then rate-making value.

During the year 1916 an increase in sales of 200,000 M cubic feet is shown. It is possible that a portion of this increase might be traced directly to the reduction

of 1½c per thousand in the average selling price, but as the percentage will be difficult if not impossible to determine, that portion of the saving to the community is ignored; but it is very clear that the equivalent of those consumers who used 2,000,000 M cubic feet in 1915 at $1 per thousand, have used in 1916 the same quantity at 1½c less per thousand cubic feet.

The minimum actual saving to the community through this reduction in the price of gas for the year 1916, will therefore have been $30,000.

This actual saving to the community in the sum of $30,000, then, is the measure of the increase in net earnings which the company should be allowed (if able to earn it) over the 6.69% determined as a fair rate of return under the conditions of 1915.

For each of the years the calculation is carried forward in this same manner.

For example, in 1917 the savings on increase in sales during that year are ignored, but the sales during 1915 are carried forward at a saving of 3c per M, and the increase in sales during 1916 are carried forward at a saving of 1½c per thousand sold, for the average net revenue of 1917 is shown as 97c per M.

These cumulative savings for 1917 aggregate $63,000 and this is the sum which should represent (for the year 1917) the maximum increase in earnings allowable to the company in excess of the 6.69% established in 1915.

It will be noted that under the conditions here assumed the actual net earnings of the company, in excess of the 6.69%, would not exceed the minimum actual saving to the community through the several reductions in the price of gas until the year 1925.

When such a condition has been reached, it may be that there should be made for the following year a relatively greater reduction in the average selling price, if the operating expenses per M of 1925 can be maintained or reduced.

This method of determining rate of return, while bringing about important savings to the community, would offer to the company a continuous inducement to the increasing of its sales, the reduction of its operating expense and the reduction of the average selling price of gas.

To all intents and purposes, it would make the gas consumers preferred share-holders in the gas company.

It would also bring about savings to the community constantly increasing not only in the total amount, but also in the percentage that such amount bears to the total paid by the community for gas.

For example, the minimum actual saving to the community, through the reduction in price, in 1916 would represent a saving of 1.38% of the total amount paid by the community for gas, whereas in 1925 the minimum actual saving to the community would represent 10.84% of the corresponding total; in the meantime the net earnings of the company would have in-

creased at a slower rate—viz., from 6.69% in 1915 to 8.90% in 1925.

There is no intention that the figures here shown shall be considered applicable as they stand to any given community or utility, but the method indicated in this calculation can be applied to any utility in any community.

It is an established fact that the flow of capital into the public utilities has, since the coming of public utility commissions, been seriously retarded.

The writer knows personally of utilities which have been prevented from coming into being only by the fixed rates of return already established by commissions in connection with existing utilities.

It must be borne in mind that the final judge of the sufficiency of any rate of return is not the community, nor the commission—it is the man whose money is to be used.

The argument of the existing companies in hearings before commissions, has been directed toward securing an increase in the fixed rate of return thought proper by the commissions.

While an increase in the fixed rate of return would doubtless be of some advantage, through providing some further incentive, it still seems clear that a variable rate of return, determined by the efficiency of the utility from the standpoint of the community, will prove of much greater and more certain value to the community than any fixed rate of return can be expected to prove.

With a variable rate of return, such as here suggested, the community would be assured that every effort of those responsible for the conduct of the utility would, at all times, be bent toward securing greater sales and greater efficiency in operation and a lower average price of its product; for the increase in volume of sales, in connection with the reduction in average selling price of the product, would determine the amount which the company would be allowed to earn in addition to the fixed percentage determined at the time of original hearing.

Operation under such a plan would encourage the establishment of new utilities in communities not now supplied and would cause existing utilities to be of vastly greater assistance in the building up and general growth of communities served.

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